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US Army Corps of Engineers' LARW Disposal Experiences

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"The radioactive waste classification system is complex, it is not transparent to the public, who are increasingly involved in decisions about management and disposal of waste, and it is not understandable by anyone but a studied expert."

NRCP Report No. 139

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Outline of Topics

- USACE – What we do
- USACE site remediation framework
- Challenges with waste classification
- LARW waste classification example
- Desirable changes to the waste classification system

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USACE – What we do

- Major Army command (MACOM)
- Organized geographically into 8 Divisions in the US and 41 Districts worldwide
- USACE supports or manages numerous environmental missions
  - e.g., EPA-Superfund, BRAC, FUSRAP, FUDS
- Generate large volumes of LARW
  - Common radionuclides: U, Ra, Th, 11e.(1)
  - Physical form: soil or building debris

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USACE Radiological Site Remediation Framework

- Most work performed IAW CERCLA and its implementing regulation, the NCP
- Often as Lead Federal Agency
  - Responding to releases at DOD and FUSRAP sites
- Close correlation between CERCLA and MARSSIM remedial processes
  - Both involve site characterization
  - Waste streams must be identified and classified
  - MARSSIM used to demonstrate site closeout

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Waste Classification

- Must review BOTH:
  - Historical information about site operations to determine how, and when, waste was produced
  - Analytical data to determine the nature and extent of radioactive contamination
- Current system is “source-based”
- Shortcomings of a source-based system
  - It is complex
  - Not an efficient use of resources
  - Cannot be defended on grounds of health protection
  - Adverse impacts on competition, project schedule
  - Unnecessary utilization of Part 61 facility capacity

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Waste Classification Example

- FUSRAP Maywood SF Site, Maywood, NJ
  - Rare earth and Th processing operations
  - Contaminated buildings, waste lagoons, offsite releases
  - NRC licensed site in 1954, 1978 limited to 3 burial pits
  - NPL 1983; FUSRAP via Congressional action
- Classification?
  - Tailings with > 0.05 wt% U or Th
- NRC 2001 letter – tailings for entire site are to be classified for disposal as 11e.(2) regardless of source material content

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Waste Classification Example

- Soils contaminated with 11e.(2)
  - Lower specific activity, << USEI's WAC
- USACE is currently sending similar, or identical, material to USEI
  - Physically, chemically, and radiologically
- Submitted 10 CFR 20.2002 request to dispose material at USEI December 2005
- Dose/dose rate estimated with TSD-Dose and Microshield
  - Critical receptor: RTF worker
  - Worst case 4.7 mrem/yr TEDE-expected <1 mrem/yr

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Waste Classification Example

- April 2006 NRC response to USACE 20.2002 request:
  - USACE is neither a licensee nor an applicant
  - USACE is not eligible to request a 20.2002 authorization
- Maywood material cannot, at this time, be disposed at USEI

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Desired Approach to Waste Classification

- Eliminate source-based waste classifications
- Eliminate case-by-case exemptions
- Develop a classification system based on health risks that could arise from waste disposal
- A general class of exempt waste
  - Exempt for purposes of disposal
  - Risk from disposal would be negligible
- These views are consistent with recommendations of NCRP (endorsed by the HPS) and IAEA

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Outcome of a Risk-Based Classification System

- Consistency, improved transparency, defensible
- Wastes within a single category would represent roughly equivalent risks following disposition
- Allows exempt materials to be handled at less cost – commensurate with risk
- Better utilization of stretched fiscal resources
- Will require changes in laws and regulations
- Could take many years to develop and promulgate